Advanced Cognition Processing and Algorithms for Improved Identification

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The official link for this solicitation is:
http://www.acq.osd.mil/osbp/sbir/solicitations/sbir20152/index.shtml

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Description:
Fixed measurements, features, and classifiers preclude systems from changing decision logic based on new information collected during an engagement, since tactical operational environments are often different from those used to collect or generate sample data. This potentially causes sensor bias thus ultimately impacts object classification. In addition, the sample data may vary form the actual data of interest. Because the measurements, features, and classifiers are fixed, traditional techniques do not allow systems to adapt to new information and change the decision based on this new information. The next evolution of target recognition approaches need to be less sample-driven and should focus on cognitive synthesis of disparate information sources. The selected innovative approach should incorporate not just classifiers, but should also consider learning techniques to blend logical inference, deductive reasoning, and expert knowledge systems. Techniques should not rely primarily on estimated sample points with fixed priors, but can employ physics, game theory, and knowledge engineering based on intelligence understanding. PHASE I: Develop a proof of concept design/study. Identify designs/models, and conduct a feasibility assessment for the proposed algorithm, model, technique, and/or methods. Work should clearly validate the viability of the proposed solution with a clear concept-of-operation document. PHASE II: Based on the results and findings of Phase I, develop and refine the proposed solution. The objective is to validate the new technology solution that a customer can transition in Phase III. Validate the feasibility of the Phase I concept by development and demonstrations that will be tested to ensure performance

objectives are met. Validation would include, but is not limited to, system simulations, operation in test-beds, or operation in a demonstration subsystem. This phase should result in a prototype with substantial commercialization potential. PHASE III: The contractor will apply the innovations demonstrated in the first two phases to one or more missile defense applications. The objective is to demonstrate the scalability of the developed technology, transition the component technology to the missile defense system or payload contractor, mature it for operational insertion, and demonstrate the technology in an operational environment. Commercialization: The contractor will pursue commercialization of the various technologies and models developed in Phase II for potential commercial uses in such diverse fields as network management, cell communications, air traffic control, finance, and other industries.